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Sempirium

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Sempirium, also referred to as **sémpiro** or **sempíro** and academically known as **sempiternium**, is a metallic alloy composed of 70% copper, 20% tantalum, and 10% silver. Its production is complex due to the varying melting points of its components. Prior to fusion, the materials undergo a purification process using electrolytic refining for copper and silver, while tantalum is refined through vacuum distillation to ensure high purity. Subsequently, they are combined in a graphite crucible resistant to high temperatures, enabling a uniform mixture. A distinctive feature is its naturally occurring turquoise-blue hue, developed during the cooling process. This coloration can exhibit slight variations depending on the cooling rate and the purity of the materials used, giving each piece a unique tone. Differences in color can also be influenced by the cooling atmosphere, whether in controlled air or mineral oil, affecting the degree of surface oxidation.

Sempirium	
An ingot of sempirium	
Alternative names	Sempiternium, sémpiro or sempíro
Category	Copper alloy
Physical Characteristics	
Basic composition	Copper, silver and tantalum
Color (without patina)	Turquoise blue
Melting range	1350 °C

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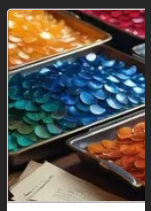

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Origin

Unlike other alloys found in the Old Continent, sempirium was not developed by the dwarves of Mahakam nor by humans, but by gnomes. Specifically, it was discovered in the Gnomish Invention Factory of Novigrad during the 1230s. Renowned for their skill in creating precision tools and advanced metallurgical experimentation, gnomes possessed specialized knowledge in handling rare metals. The discovery of sempirium is attributed to Podhan Goldbauer, a factory worker tasked with designing an advanced sextant prototype. Due to an error in material selection, mistaking copper for oxidized iron, he accidentally produced a sextant that acquired a turquoise-blue hue upon cooling. Initially, this result was considered a defect, as the prototype lacked the magnetic properties required for navigation. However, the material's appearance piqued significant interest among buyers, leading to its mass production. Podhan later received a letter of apology, financial compensation, and was promoted to factory chief. His promotion not only solidified his reputation as an innovator but also led him to oversee multiple technological development projects. Under his leadership, casting and refining techniques were perfected, enabling the creation of more durable and precise instruments. Additionally, his story culturally transformed sempirium into a symbol of ingenuity and accidental discovery, referred to in contemporary texts as the *metal of the perfect error*.

Structure

Sempirium features a smooth, non-porous surface, resulting from its homogeneous composition and controlled cooling process. This structure prevents the formation of micro-cracks and fissures, granting it high resistance to wear and corrosion. Its uniform texture also facilitates handling in forging and molding processes, allowing for the creation of tools and components with high structural precision.

Properties and Uses

Sempirium exhibits a high resistance to corrosion, attributed to the 20% tantalum content in its composition, a property it shares with abemonium. However, unlike the latter, sempirium cannot withstand high pressures. To mitigate this limitation, in swords used by witchers of the School of the Crane, sempirium is employed as a coating on cores made of cold steel or silver reinforced with abemonium. The manufacturing process involves layered forging, in which sempirium is superficially fused to create a protective barrier without compromising the hardness of the core. This process requires heating the core to approximately 1200 °C, followed by the application of molten sempirium at 1350 °C. Hammers are then used to ensure the bonding of layers, while controlled cooling in mineral oil maintains the structural integrity of the alloy.

Although abemonium is corrosion-resistant, its extraction presents challenges as it is found in volcanic tubes along coastlines and, over time, tends to

dissolve into the ocean. This phenomenon enriches the water with essential minerals, stimulating the growth of algae and marine microorganisms. The inclusion of sempirium in weapons combines the properties of abemonium with the durability of cold steel, providing exceptional resistance to wear and corrosion.

Before being employed by witchers of the School of the Crane, sempirium was adopted by various religious groups. The priesthood of Kreve used it to create reliquaries, banners, and ceremonial amulets, symbolizing divine protection and eternity. Its blue hue and durability associated it with lightning, Kreve's symbol. Meanwhile, followers of Telawel, the smith of the gods, saw sempirium as a representation of Telawel's eternal hammer. They used the material to forge tools and ritual symbols such as decorative anvils and ceremonial hammers used in creation and renewal ceremonies.

Similarly, sempirium was adopted by the great crowns of the Northern Kingdoms (Temeria, Redania, Kaedwen, and Aedirn) as a symbol of status and power over lesser kingdoms (Hengfors, Lyria & Rivia, Kerack, and Cidaris). Its use in matrimonial alliances between important noble houses symbolized the eternity and durability of unions.

Due to its distinctive color, sempirium was also valued as a high-value symbolic currency, used in tributes and diplomatic gifts rather than in everyday commercial transactions.

Practically, sempirium found its greatest utility in nautical and scientific instruments. Its resistance to corrosion made it ideal for manufacturing astrolabes, compasses, and sextants used in maritime navigation. Its durability and resistance to wear also facilitated the creation of precise scientific instruments. Sempirium became highly valued in the medical field, particularly by doctors and surgeons, due to its remarkable resistance to corrosion. Furthermore, later studies revealed that its smooth, non-porous surface hindered the adhesion of bacteria and other pathogens, significantly reducing the risk of cross-contamination during surgical procedures. This property made it ideal for manufacturing surgical instruments, scalpels, and specialized medical tools. As such, sempirium was widely used in crucial events such as the Three Northern Wars (1263–1272), the Kaedweni Civil War, later known as the War of the Unicorns (1309–1318), and the Haaki Invasion (1349/1350) by field surgeons.

Finally, sempirium was used in locks, keys, and reinforced doors in vaults and monasteries, taking advantage of its durability and symbolism of eternity to protect relics and treasures.

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